**ABSTRACT**

An adaptive demosaicing method is disclosed that interpolates images based on color edge detection and neighborhood voting. The adaptive demosaicing algorithm uses a voting scheme to determine the direction of interpolation at each missing luminance pixel location. Each color plane votes either horizontal or vertical based on a comparison between the vertical and horizontal components of the degree of change (i.e., gradient, Laplacian or other measure of the degree of change) in that color plane. Votes are counted from the neighborhood pixels as well as from measurements taken at the pixel location itself. Once the luminance plane is fully interpolated, the chrominance planes are filled in by a simple bilinear or median interpolation of difference chrominance values. Enhancements to the adaptive demosaicing algorithm permit adaptive smoothing and sharpening.